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A survey of the Lepidoptera fauna from the Blue Mountains of eastern Oregon

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Abstract. Blacklight trap and aerial net collections for 1 season resulted in identification of 55 species of day-flying Lepidoptera and an additional 383 species of moths in northeastern Oregon mixed-coniferous forests. A total of 212 moth species (55%) were Noctuidae and an additional 93 species (24%) were Geometridae. Notes are presented on the relative abundance of moths in trap collections, flight period of trapped moths, and larval host food plants. Most species were represented in trap collections by few individuals; 41.5% had 5 or fewer specimens, and an additional 30% had 25 or fewer specimens. Only 5.5% of the species were considered abundant, with 200 or more specimens trapped.

Introduction

The Blue Mountains of eastern Oregon are characterized by moderate slopes, relatively low annual precipitation, and high summer temperatures (Franklin and Dyrness 1988). Higher elevation sites are usually occupied by mixed-coniferous forests of predominately ponderosa pine, *Pinus ponderosa* Dougl. ex. Laws, Douglas-fir, *Pseudotsuga menziesii* (Mirb.) Franco, grand fir, *Abies grandis* (Dougl.) Lindl., and western larch, *Larix occidentalis* Nutt. However, stream bottoms, spring-fed marshy areas, and other riparian zones usually contain a variety of hardwood shrubs, forbs, and grasses. Historically, major outbreaks of forest insect defoliators (e.g. western spruce budworm, *Choristoneura occidentalis* Free., and Douglas-fir tussock moth, *Orgyia pseudotsugata* (McDunn) have occurred in this region, resulting in large aerial spray suppression programs (Brookes et al. 1978; Brookes et al. 1987). Similar outbreaks will happen again in the future. Thus, the Blue Mountains are of special interest to Oregon forest managers who are concerned with protecting forests from unacceptable insect damage.

When damaging outbreaks of forest defoliators do occur, microbial insecticides are preferred for suppression of the insect populations because of their insect selectivity, high degree of environmental safety, and general public acceptance. Since 1980, *Bacillus thuringiensis* Berliner subsp. *kurstaki*, (BTK), has been the microbial insecticide of choice for most forest spraying in the United States and Canada. Although BTK

is a lepidopterous disease agent, its relative safety has been determined for many organisms in the environment, such as birds, fish, mammals, some non-lepidopterous insects and other arthropods (e.g. Eidt 1985; Niwa et al. 1987; Kreig and Langenbruch 1981). Still, questions frequently arise about whether or not desirable moths and butterflies in the spray area may be decimated along with the target species. In a study related to a gypsy moth, *Lymantria dispar* (L.), suppression program using BTK in oak stands in western Oregon, Miller (1990) found that overall abundance and species richness was reduced among 35 species in 10 lepidopterous families. In that instance, however, BTK was sprayed 3 times in 1 season over the same acreage. For western spruce budworm or Douglas-fir tussock moth suppression, the norm is only 1 spray per year with many years interval before that suppression is again necessary. In a later study, Miller (1992) found that a single BTK treatment caused an immediate significant reduction in nontarget larval abundance, which was still noticeable the following season. He observed that species richness decreased among the less-abundant (or uncommon) species on the spray site--perhaps eliminating them from the system--and that effects on species richness and abundance might be masked by examination of only the gross results of spraying on the more common species. He stated that this potential danger to uncommon species on the spray site justifies special management consideration to protect rare or endangered species. This, of course, presupposes that management knows what rare or endangered species are present, a condition that can only be met by adequate baseline surveys prior to treatment.

With the prospect of continued or increasing use of BTK for forest protection in the future, it is essential that we learn more about the unintended impacts of broad-scale BTK sprays. The first requirement for that is to know as precisely as possible the diversity and relative abundance of species present before treatment. No comprehensive investigation of the effects of BTK sprays on nontarget Lepidoptera has yet been done in Blue Mountains mixed-coniferous forests, although it is known that many species of Lepidoptera exist in areas sometimes sprayed (Forsberg et al. 1976). Cumulative lists of Lepidoptera have been compiled and maintained for areas west of the Cascade Mountains crest (e.g. Parsons et al. 1991), but similar survey lists are not available for the Blue Mountains. The insect fauna of eastern Oregon is different from that of more mesic western areas. This paper reports the results of an initial survey to gather baseline data necessary to evaluate the impacts of BTK sprays on nontarget Lepidoptera present on potential spray sites in the Blue Mountains.

Methods

In 1992, we operated ULV blacklight traps at 4 locations in the Blue Mountains between LaGrande, in Union County, and Ukiah, in Umatilla County, Oregon. Paired research plots were established in the Wallowa-Whitman National Forest

and the Umatilla National Forest. Plots 1 and 2 were spaced about 1 km (0.625 mi.) apart along Meadow Creek on Starkey Experimental Forest (Sec. 35 and 27, T.3 S., R.34 E.). Plots 3 and 4 were at 1 km intervals in the upper watershed of Pearson Creek and at Granite Meadow (Sec. 25 and 35, T.3 S., R.32 E.), both about 10 km west of Meadow Creek. Meadow Creek has year-around running water, while both of the other areas are spring-fed, marshy sites where surface water often dries up in midsummer. All 4 plots had similar riparian vegetation and woody plants present, as well as a wide variety of grasses and forbs. All were subject to cattle grazing, although plot 1 on Meadow Creek had some fenced portions to exclude cattle.

Two ULV blacklight traps were placed in each plot during the first week of May. Traps were universal-type (BioQuip Products Inc.[1]), with circular 22-watt flourescent blacklight bulbs powered by 12-volt auto batteries. Vapona®[1] insecticide strips were placed in the lower trap sections to act as killing agents for trapped insects. A photoelectric switch in each trap allowed automatic dusk-to-dawn operation. Traps were hung from individual tree branches, about 1.5 m from the ground, in positions unobstructed from view by tree branches. Except for the last week of August and a 2-week period in mid-September, the traps were operated for 3 consecutive nights each week until October 10. Moths were collected daily from traps and taken to the laboratory for later identification.

Day-flying species, primarily butterflies, were sampled by frequent, brief net collections in plots after the traps had been serviced.

All macrolepidoptera were identified to species, but only part of the microlepidoptera could be identified; these were primarily the larger species in the families Pyralidae and Tortricidae. Species of Pterophoridae were attracted to the blacklight traps, but were not identified. Very small moths of the gelechioid families were not considered in this study. Voucher specimens of species discussed in this paper are stored at Forestry Sciences Laboratory, Pacific Northwest Research Station, Corvallis, Oregon.

Results and Discussion

A total of 54 species of butterflies and 1 day-flying Arctiidae were collected at the 4 trapping sites (Table 1), which probably represents most, but not all, of the day-flying lepidopteran species. All of these species had been previously taken in Oregon (Dornfeld 1980; McFarland 1963; Parsons et al. 1991). No attempt was made to collect all individuals available—only a representative sample of the species active at the time. The intent was to document species richness, but not abundance, since available time did not allow systematic net sampling. The 1992 field season began as an "early spring." Some species may have been missed or were well into their flight period by the time our collections began. Had we started earlier than the first week of May, it is likely that we would have caught more individuals of certain species (those with overwintering adults, or early emergence), or even additional species. By the final

[1]The use of trade names in this publication is for reader information and does not imply endorsement by the U.S. Department of Agriculture of any product or service.

week of sampling (October 7), night temperatures were often below freezing, days were usually cool, and the flight period for most Lepidoptera was clearly over.

Two families (Nymphalidae, Lycaenidae) account for well over half (35) of the total species collected. These are often some of the most abundant butterflies active and feeding on flowers on any particular day. Larval hosts for most of the species in Table 1 are primarily various flowering plants, such as violets, lupines, and thistles. Hardwood shrubs (e.g. willow, blueberries) are also common food sources in spring. Still, there are guilds of satyrids and hesperiids which feed as larvae on grasses.

Two species in Table 1 were not actually captured by net. Because the adults typically fly around and rest in the tops of pine trees infested by their host plants, *Mitoura spinetorum* (Hewitson) larvae were collected from dwarf mistletoe plants (*Arceuthobium campylopodum* Engleman) on pines and reared to the adult stage. Similarly, larvae of *Satyrium sylvinus* (Boisduval) were found on willow leaves and reared to adults.

Larvae of the arctiid moth *Gonophaela vermiculata* (Grote) were collected in May and reared to adults on their food plant tall bluebells, *Mertensia paniculata* (Ait.) G. Don, and later taken by net from the same host. This moth is not active at night and none of these were caught in light traps.

Table 2 shows the complete list of all 383 species of moths taken in blacklight traps over the May-October period. Of these, 55% (212 species) were noctuids; the genus *Euxoa* alone was represented by 37 species. Geometridae was the second largest family, with 93 species identified. The total number of individuals of each species caught is given only to indicate relative abundance, as these data were subject to influence by other factors, such as the behavioral characteristics of the individual species (e.g. some species may not respond well to the specific wavelength of the ULV lights). Still, some species seemed to be especially abundant. For example, we collected 2205 *Spilosoma vagans* (Boisduval), 2033 *Petrophila confusalis* (Walker), and 1075 *Euxoa munis* (Grote).

Conversely, the data in Table 2 show that a large number of species apparently have sparse populations or are poorly attracted to ULV lights. For many species, we caught only 1 to 3 specimens, all in the same week. When this single-instance catch happened during the first week of trapping (May 6), e.g. *Cladara limitaria* (Walker) or *Behrensia conchiformis* Grote, it may represent catch at the end of the flight period. Earlier trapping might have resulted in more individuals of these species being caught. However, when we trapped a single specimen (or even 2 or 3) during only 1 week later in the season, e.g. *Alucita hexadactyla* Linnaeus or *Malacosoma californicum* (Packard), that may be the result of an actual paucity of individuals available to be caught. Also, there is some evidence (unpublished data) that many species do not disperse far from their food plants or pupation locations and thus may not reach the traps in quantities truly representative of their population density.

A comparison of the relative abundance of the different species, based solely upon the total numbers of individuals per species caught during the whole season (Table 3), shows that the vast majority of species (273 of 383) may indeed have quite sparse populations. We caught 5 or less individuals in 159 species, and 25 or less in an additional 114 species. To be ranked as rare or uncommon species, the criteria of 25-or-less specimens trapped over the season should be a conservative goal. Assuming only a 2-week emergence and dispersal period, that usually would allow for 12 trap-nights per site (2 weeks/2 traps/3 nights) in which to catch 25 moths, an easily attainable number since few species were restricted to only 1 pair of traps. The majority of rare or uncommon species were in the Noctuidae (60%). Conversely, only 5.5% (21) of all species could be considered abundant, as indicated by a total catch of 200 or more individuals.

Because the net collections did not systematically sample populations of day-fliers (Table 1), no direct comparison of relative abundance by species can be made. Nevertheless, some genera of butterflies were noticeably abundant on warm days, such as *Polites* sp., *Pyrgus* sp., *Icaricia* sp., *Lycaena* sp., *Speyeria* sp., and *Vanessa* sp.

Ten of the species listed in Table 2 were new records for Oregon (Grimble et al. 1993) and an additional 18 species had previously been collected in Oregon only from the western mountain ranges (both groups identified by footnotes).

Some species, for example *Scoliopteryx libatrix* (Linnaeus) and 3 species of *Xylena*, are known to overwinter as adults. Examination of the flight period data in Table 2 leads to the conclusion that many other species probably also have at least some adults overwintering, as well as some producing more than 1 generation per year. For instance, *Epirrita autumnata* (Borkhausen) was trapped in early June; then, no specimens were taken until late September. Examples of species caught over a 6-8 week period, or longer, are numerous, such as *Spilosoma vagans* (Boisduval) and *Sphinx vashti* Strecker. This extended flight period may be the result of microclimatic variation in pupation sites.

Where host plants are known, the larvae of most species tend to utilize angiosperms as food sources. Many of them apparently develop equally well on a range of food plants, such as herbs and hardwoods. Some, on the other hand, have been usually collected from only one host plant; e.g. *Semiothisa denticulata* (Packard) and *S. sexmaculata* (Packard) on larch or tamarack (*Larix* sp.). A summary of the number of species known to use certain host plant types (Table 4), shows that hardwood trees and shrubs (44%), and herbs, and grasses (43%) make up most of the food. Conifers make up a distant third preference (10%), even though eastern Oregon forests are nearly pure coniferous types. Evidently, Lepidoptera find much of their food in moist, riparian zones where hardwoods, grasses, and herbs are more abundant. Few species (2%) alternate between conifers and hardwoods.

The baseline data presented in this paper probably represent the majority of butterfly species and a large portion of the moth species present in our study areas. The number of moth species may be underestimated, partly because some species are not readily attracted and caught in blacklight traps. Thus, the fact that low numbers of certain species were collected in traps may not be truly indicative of their rarity.

These data will be useful when decisions are made concerning the impacts of BTK on nontarget Lepidoptera. However, such decisions must also be based upon the biology of larvae of the species in question. Clearly, a species must be present in larval form at the time of spraying to be impacted by the spray. Our baseline data will help managers determine which species fit into this category. Furthermore, Peacock and Schweitzer (1993, in press) made it clear that early instars of a species are generally more susceptible to BTK than are later instars. Still, this is not always the case, and it appears that BTK susceptibility must be considered on a species-to-species basis.

Additional field work is needed to document the larval and flight periods of species on our study areas, particularly those which may be "rare," "uncommon," or otherwise of "special concern." Many species of Lepidoptera contribute significantly to the food resources of other wildlife. It is therefore critical to know if the direct affects of BTK on nontarget Lepidoptera will indirectly have a significant impact on other wildlife.

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Table 1. Diurnal lepidoptera, collection dates, and partial larval host plants list, collected from the Blue Mountains, Oregon, 1992.

Species	No.	Dates[1]	Host plants[2]
ARCTIIDAE			
Gonophaela vermiculata (Grote)	4	9.VII	Hrb; BORAGIN., Mertensia sp.
HESPERIIDAE			
Erynnis persius (Scudder	8	12.V-8.VI	Shrb; SALIC., Salix sp.
Hesperia juba (Scudder)	11	11.V-14.VIII	Grs; PO.
Ochlodes sylvanoides (Boisduval)	19	9.VII-11.VIII	Grs; PO.
Polites peckius (Kirby)	5	9.VI-14.VII	Grs; PO.
Polites sonora (Scudder)	4	8.VI-9.VI	Grs; PO.
Pyrgus communis (Grote)	20	12.V-14.VIII	Hrb; MALV.
Pyrgus ruralis (Boisduval)	3	19.V-14.VIII	Hrb
LYCAENIDAE			
Celastrina argiolus (Linnaeus)	1	12.V	Hdw
Everes comyntas (Godart)	2	12.V-13.V	Hrb; FAB.
Glaucopsyche lygdamus (Doudleday)	8	12.V-19.V	Hrb; FAB.
Icaricia acmon (Westwood & Hewitson)	3	28.V-16.VII	Hrb; POLYGON., Eriogonum sp.
Icaricia icarioides (Boisduval)	14	12.V-21.VII	Hrb; FAB., Lupinus sp.
Incisalia eryphon (Boisduval)	6	12.V-26.V	Con; PIN., Pinus sp.
Lycaeides melissa (Edwards)	7	9.VII-10.VII	Hrb; FAB., Lupinus sp.
Lycaena editha (Mead)	33	8.VI-14.VIII	Hrb; POLYGON.
Lycaena helloides (Boisduval)	5	26.V-30.VII	Hrb; POLYGON.
Lycaena heteronea (Boisduval)	10	8.VI-21.VII	Hrb; POLYGON., Eriogonum sp.
Lycaena mariposa (Reakirt)	41	8.VI-21.VII	Shrb; ERIC.,Vaccinium sp.
Lycaena nivalis (Boisduval)	7	26.V-10.VII	Hrb; POLYGON., Polygonum sp.
Mitoura spinetorum (Hewitson)[3]	2	30.VI-2.VII	Hrb; LORANTH., Arceuthobium sp.
Plebejus saepiolus (Boisduval)	47	12.V-28.VII	Hrb; FAB., Trifolium sp.
Satyrium sylvinus (Boisduval)[3]	2	10.VII-11.VII	Shrb; SALIC., Salix sp.
Strymon melinus (Hubner)	5	26.V-28.VII	Hrb
NYMPHALIDAE			
Boloria epithore (Edwards)	2	8.VI	Hrb; VIOL., Viola sp.
Chlosyne palla (Boisduval)	9	26.V-28.VII	Hrb; ASTER.
Euphydryas chalcedona (Doubleday)	20	18.V-9.VII	Hrb; SCROPHULARI, Penstemon sp.
Euphydryas editha (Boisduval)	2	27.VII	Hrb; PLANT

			AGINACEAE, Plantago sp.
Limenitis lorquini (Boisduval)	8	8.VII-14.VIII	Shrb; SALIC., Salix sp.
Nymphalis antiopa (Linnaeus)	5	19.V-11.VIII	Shrb; SALIC., Salix sp.
Nymphalis milberti (Godart)	8	19.V-26.V	Hrb; URTIC., Urtica sp.
Phyciodes campestris (Behr)	11	27.V-29.VII	Hrb; ASTER., Aster sp.
Phyciodes mylitta (Edwards)	16	12.V-5.VIII	Hrb; ASTER.
Polygonia faunus (Edwards)	2	12.V-30.VII	Hdw
Polygonia satyrus (Edwards)	11	12.V-4.VIII	Hrb; URTIC., Urtica sp.
Speyeria atlantis (Edwards)	4	2.VI-19.VI	Hrb; VIOL., Viola sp.
Speyeria zerene (Boisduval)	14	8.VI-23.IX	Hrb; VIOL., Viola sp.
Speyeria cybele (Fabricius)	8	8.VII- 14.VIII	Hrb; VIOL., Viola sp.
Speyeria hydaspe (Boisduval)	28	26.V-14.VIII	Hrb; VIOL., Viola sp.
Speyeria mormonia (Boisduval)	6	8.VI-11.VIII	Hrb; VIOL., Viola sp.
Vanessa annabella (Field)	3	12.V-9.VI	Hrb; MALV.
Vanessa atalanta (Linnaeus)	4	9.VI-16.VIII	Hrb; URTIC., Urtica sp.
Vanessa cardui (Linnaeus)	27	12.V-21.VII	Hrb; ASTER., Cirsium sp.
PAPILIONIDAE			
Papilio eurymedon (Lucas)	2	2.VI-8.VI	Shrb; RHAMN., Ceanothus sp.
Papilio zelicaon (Lucas)	1	19.V	Hrb; API.
PIERIDAE			
Anthocaris sara (Lucas)	9	12.V-2.VI	Hrb; BRASSIC.
Colias alexandra (Edwards)	1	9.VII	Hrb; FAB., Astralagus sp.
Colias interior (Scudder)	8	8.VI-19.VI	Shrb; ERIC., Vaccinium sp.
Neophasia menapia (Felder)	8	27.VII-5.VIII	Con; PIN.
Pieris napi (Linnaeus)	26	12.V-6.VIII	Hrb; BRASSIC.
Pieris rapae (Linnaeus)	3	12.V-19.V	Hrb; BRASSIC.
SATYRIDAE			
Cercyonis oetus (Boisduval)	2	9.VII-14.VII	Grs; PO.
Cercyonis pegala (Fabricius)	49	8.VII-14.VIII	Grs; PO.
Coenonympha tullia (Linnaeus)	18	12.V-14.VIII	Grs; PO.
Erebia epipsodea (Butler)	6	18.V-2.VI	Grs; PO.

[1]Collection dates are written as day=arabic numeral, month=Roman numeral (e.g. 19.VIII is 19 August).

[2]Host plant references: Dornfeld 1980; and Parsons et al. 1991. Abbreviations are Con= conifers, Hdw= hardwoods, Hrb= herbs, Grs= grasses, Shrb= shrubs, API.= APIACEAE, ASTER.= ASTERACEAE, BORAGIN.= BORAGINACEAE, BRASSIC.= BRASSICACEAE, ERIC.= ERICACEAE, FAB.= FABACEAE, LORANTH.= LORANTHACEAE, MALV.= MALVACEAE, PIN.= PINACEAE, PLANTAGIN.= PLANTAGINACEAE, PO.= POACEAE, POLYGON.= POLYGONACEAE, RHAMN.= RHAMNACEAE, SALIC.= SALICACEAE, SCROPHULARI.= SCROPHULARIACEAE, URTIC.= URTICACEAE, VIOL.= VIOLACEAE.

[3]Larvae of this species were collected from host plants and reared to the adult stage.

Table 2. Relative abundance, flight periods, and partial larval host plants list for lepidoptera taken in ULV blacklight traps in the Blue Mountains, Oregon, 1992.

Species	No.[1]	Dates[2]	Host plants[3]
ALUCITIDAE			
Alucita hexadactyla Linnaeus	1	3.VI	
ARCTIIDAE			
Cycnia oregonensis (Stretch)[7]	2	29.V-12.VIII	Hrb; APOCYN., Apocynum sp.
Grammia nevadensis (Grote & Robinson)	1	18.VIII	Hrb
Grammia ornata (Packard)	620	13.V-29.VII	Hrb
Lophocampa maculata Harris	168	20.V- 15.VII	Hdw
Platarctia parthenos (Harris)[4]	1	10.VI	Hdw
Spilosoma vagans (Boisduval)	2205	6.V- 8.VII	Hrb
Spilosoma virginica (Fabricius)	19	27.V- 22.VII	Hrb/Hdw
GEOMETRIDAE			
Anagoga occiduaria (Walker)	18	13.V- 17.VI	Hdw
Biston betularia (Guenee)	26	20.V- 24.VI	Hdw
Campaea perlata Guenee	10	27.V- 15.VII	Hdw
Caripeta aequalaria Grote	49	20.V- 12.VIII	Con; PIN.
Ceratodalia gueneata Packard	16	24.VI- 12.VIII	Hrb
Chlorosea banksaria Sperry	9	17.VI- 15.VII	Shrb; RHAMN., Ceanothus sp.
Cladara limitaria (Walker)	3	6.V	Con; PIN.
Cyclophora pendulinaria (Guenee)	46	6.V- 24.VI	Hdw
Drepanulatrix carnearia (Hulst)	13	27.V- 24.VI	Shrb; RHAMN., Ceanothus sp.
Drepanulatrix foeminaria (Guenee)	30	6.V- 3.VI	Shrb; RHAMN., Ceanothus sp.
Drepanulatrix hulstii (Dyar)	3	23.IX	
Drepanulatrix quadraria (Grote)	27	27.V- 15.VII	Shrb; RHAMN., Ceanothus sp.
Drepanulatrix unicalcararia (Guenee)	46	13.V- 30.IX	Shrb; RHAMN., Ceanothus sp.
Dysstroma brunneata (Packard)	3	29.VII- 5.VIII	Shrb; GROSSULARI., Ribes sp.
Dysstroma citrata (Linnaeus)	25	10.VI- 15.VII	Hdw
Dysstroma formosa (Hulst)	175	8.VII- 30.IX	Shrb; GROSSULARI., Ribes sp.
Dysstroma hersiliata (Guenee)	2	22.VII- 29.VII	Shrb; GROSSULARI., Ribes sp.
Dysstroma truncata (Hufnagel)	1	13.V	Hdw
Elpiste lorquinaria (Guenee)	4	22.VII- 2.IX	Hdw; BETUL., Alnus sp.
Ennomos magnaria (Guenee)	8	5.VIII- 30.IX	Hdw
Epirrhoe alternata (Mueller)	11	24.VI- 29.VII	Hrb
Epirrhoe sperryi (Herbulot)	1	3.VI	
Epirrita autumnata (Borkhausen)	15	3.VI 23.IX- 30.IX	Hdw/Con
Euchlaena marginaria (Minot)	139	27.V- 29.VII	Hdw
Euchlaena johnsonaria (Fitch)	1	24.VI	Hdw
Eudrepanulatrix rectifascia (Hulst)	5	10.VI- 24.VI	Shrb; RHAMN., Ceanothus sp.
Eulithis destinata (Moschler)	85	24.VI- 23.IX	Shrb; GROSSULARI., Ribes sp.

Eulithis propulsata (Walker)	10	24.VI- 12.VIII	Shrb; SALIC., Salix sp.
Eulithis xylina (Hulst)	165	1.VII- 2.IX	Shrb; SALIC., Salix sp.
Euphyia unangulata (Haworth)	143	27.V- 15.VII	Hrb
Eupithecia agnesata Taylor	4	29.VII- 12.VIII	
Eupithecia cretaceata (Packard)	19	13.V- 22.VII	Hrb
Eupithecia misturata (Hulst)	14	10.VI- 29.VII	Shrb; RHAMN., Ceanothus sp.
Eupithecia multiscripta (Hulst)	18	27.V- 10.VI	
Eupithecia subcolorata (Hulst)	132	6.V- 1.VII	
Eustroma semiatrata (Hulst)[7]	68	27.V- 7.X	Hrb
Gabriola dyari Taylor	2	12.VIII	Con; PIN., Pseudotsuga sp.
Glena nigricaria (Barnes & McDunnough)	13	27.V- 17.VI	Con; PIN., Pinus sp.
Hesperumia sulphuraria Packard	76	1.VII- 19.VIII	Shrb; ROS.
Hydria undulata (Linnaeus)	4	3.VI- 24.VI	Hdw
Hydriomena furcata (Thunberg)	5	22.VII-19.VIII	Hdw
Hydriomena perfracta Swett	2	13.V- 10.VI	Shrb; SALIC., Salix sp.
Hydriomena marinata Barnes&McDunnough	17	6.V- 27.V	Con; PIN.
Iridopsis emasculata (Dyar)	240	27.V- 22.VII	Hdw
Itame bitactata (Walker)[7]	33	10.VI- 2.IX	Shrb; GROSSULARI., Ribes sp.
Itame brunneata (Thunberg)	70	24.VI- 19.VIII	Shrb; ERIC., Vaccinium sp.
Itame quadrilinearia (Packard)	2	5.VIII	Hdw
Lambdina fiscellaria (Guenee)	14	19.VIII-30.IX	Hdw/Con
Leptostales rubromarginaria (Packard)	1	12.VIII	Hdw
Lobophora montanata Packard	5	6.V- 24.VI	
Melanolophia imitata (Walker)	211	6.V- 27.V	Con; PIN.
Mesothea incertata (Walker)	1	3.VI	Shrb; ERIC., Vaccinium sp.
Nacophora mexicanaria (Grote)	13	20.V- 1.VII	
Nematocampa limbata (Haworth)	15	22.VII- 12.VIII	Con; PIN.
Nemoria darwiniata (Dyar)	109	3.VI- 19.VIII	Shrb; SALIC., Salix sp.
Neoterpes trianguliferata (Packard)	4	6.V- 10.VI	Shrb; GROSSULARI., Ribes sp.
Nepytia phantasmaria (Strecker)	1	23.IX	Con; PIN.
Nepytia umbrosaria (Packard)	15	22.VII- 19.VIII	Con; PIN.
Perizoma costiguttata (Hulst)[7]	19	13.V- 12.VIII	
Perizoma curvilinea (Hulst)	2	13.V	
Pero mizon Rindge	121	24.VI- 19.VIII	Hdw
Pero morrisonaria (H. Edwards)	1	10.VI	Con
Pero occidentalis (Hulst)	244	6.V- 24.VI	Con; PIN.
Prochoerodes forficaria (Guenee)	3	6.V- 24.VI	Hdw
Protitame matilda (Dyar)	13	10.VI- 24.VI	Shrb; SALIC.
Protoboarmia porcelaria (Guenee)	1	12.VIII	Hdw/Con
Rheumaptera subhastata (Nolcker)	1	20.V	Hdw
Sabulodes edwardsata (Hulst)	1	29.VII	Con; PIN.
Scopula ancellata (Hulst)[4]	59	17.VI- 12.VIII	
Scopula junctaria (Walker)	517	27.V- 5.VIII	Hrb; POLYGON.
Scopula luteolata (Hulst)	88	20.V- 12.VIII	
Scopula sideraria (Guenee)	16	20.V- 24.VI	Hrb

Selenia alciphearia Walker	7	13.V- 17.VI	Hdw
Semiothisa adonis (Barnes & McDunnough)[7]	15	27.V- 19.VIII	Con
Semiothisa denticulata (Packard)[7]	44	6.V- 2.IX	Con; PIN., Larix sp.
Semiothisa neptaria (Guenee)[7]	109	6.V- 19.VIII	Hdw
Semiothisa sexmaculata (Packard)[7]	45	13.V- 2.IX	Con; PIN., Larix sp.
Semiothisa signaria (Walker)	5	10.VI- 5.VIII	Con; PIN.
Sericosema juturnaria (Guenee)	17	15.VII- 19.VIII	Shrb; RHAMN., Ceanothus sp.
Sicya crocearia Packard	58	8.VII- 19.VIII	Hdw
Snowia montaneria Neumoegen	1	10.VI	
Spargania magnoliata Guenee	2	10.VI	Hrb
Stamnodes blackmorei Swett	4	12.VIII- 2.IX	Hrb
Stenoporpia dejecta (Hulst)	12	2.IX- 23.IX	Con
Synaxis cervinaria (Packard)	8	13.V- 24.VI	Hdw
Synaxis jubararia (Hulst)	33	2.IX- 7.X	Hdw
Synchlora aerata (Fabricius)	33	10.VI- 23.IX	Hrb
Triphosa haesitata (Guenee)[6]	2	15.V- 30.IX	Hdw
Venusia duodecemlineata (Packard)	9	6.V- 10.VI	
Venusia pearsalli (Dyar)	2	3.VI- 30.IX	Hdw
Xanthorhoe defensaria (Guenee)[7]	233	6.V- 30.IX	Hdw
Xanthorhoe macdunnoughi Swett	4	17.VI	
Zenophleps lignicolorata (Packard)	42	2.IX- 30.IX	
HEPIALIDAE			
Hepialus mathewi H.Edwards	4	2.IX- 23.IX	Hdw/Con roots
LASIOCAMPIDAE			
Malacosoma californicum (Packard)	2	24.VII	Hdw
Malacosoma disstria Hubner	19	22.VII- 19.VIII	Hdw
Phyllodesma americana (Harris)[7]	157	6.V- 10.VI	Hdw
		29.VII- 12.VIII	Hdw
Tolype distincta French	67	29.VII- 30.IX	Hdw
LYMANTRIIDAE			
Orgyia pseudotsugata (McDunnough)	1	27.VII	Con; PIN.
NOCTUIDAE			
Abagrotis apposita (Grote)	1	12.VIII	
Abagrotis baueri McDunnough	1	12.VIII	
Abagrotis mirabilis (Grote)	3	19.VIII- 2.IX	Shrb; CUPRESS., Juniperous sp.
Abagrotis nefascia (Smith)	6	24.VI- 19.VIII	
Abagrotis placida (Grote)	1	19.VIII	
Abagrotis scopeops (Dyar)	4	19.VIII- 30.IX	
Abagrotis trigona (Smith)	2	29.VII; 12.VIII	Hdw
Abagrotis variata (Grote)	9	10.VI- 12.VIII	

Acerra normalis Grote	4	6.V- 20.V	Hdw
Achytonix epipaschia (Grote)	5	29.VII- 19.VIII	Con; PIN., Pseudotsuga sp.
Acontia flavipennis (Grote)	1	10.VI	Hrb; MALV.
Acronicta fragilis Guenee[5]	3	27.V- 10.VI	Hdw
Acronicta grisea Walker	7	27.V- 17.VI	Hdw
Acronicta hesperida Smith	44	20.V- 22.VII	Hdw
Acronicta impressa Walker	4	6.V- 5.VIII	Hdw
Acronicta mansueta Smith	2	6.V- 13.V	
Agrochola pulchella (Smith)[5]	1	30.IX	Hdw
Agrochola purpurea (Grote)	97	23.IX- 7.X	Hdw
Agroperina dubitans (Walker)	116	17.VI- 2.IX	Grs; PO.
Agroperina lateritia (Hufnagel)	6	1.VII- 12.VIII	
Agrotis obliqua (Smith)[5]	4	24.V- 17.VI	Hrb
Agrotis vancouverensis Grote	13	20.V- 10.VI	Hrb
Agrotis venerabilis Walker	9	2.IX- 23.IX	Hrb
Agrotis ipsilon (Hufnagel)[7]	313	6.V; 22.VII-7.X	Hrb
Aletia oxygala (Grote)	62	6.V- 29.VII	Grs; PO.
Amphipoea keiferi (Benjamin)	12	23.IX- 30.IX	
Amphipoea senilis (Smith)	25	2.IX- 30.IX	
Amphipyra tragopoginis (Linnaeus)	2	5.VIII- 19.VIII	Hrb
Anaplectoides prasina Denis & Schiffermuller[5]	3	24.VI- 15.VII	Hdw
Anaplectoides pressus (Grote)	4	17.VI- 8.VII	Hdw
Androloma maccullochi (Kirby)	16	13.V- 27.V	Hrb; ONAGR., Epilobium sp.
Andropolia theodori (Grote)	3	5.VIII- 2.IX	Hdw
Anepia capsularis (Guenee)	17	10.VI- 29.VII	Hrb; CARYOPHYLL.
Anomogyna mustelina (Smith)	8	12.VIII- 30.IX	Con; PIN.
Anomogyna vernilis (Grote)	24	12.VIII- 30.IX	Con; PIN.
Apamea acera (Smith)	3	22.VII	
Apamea alia (Guenee)	4	24.VI- 12.VIII	Grs; PO.
Apamea amputatrix (Fitch)	25	10.VI- 30.IX	Hrb/Grs; PO.
Apamea antennata (Smith)	38	3.VI- 19.VIII	
Apamea auranticolor (Grote)	22	24.VI- 22.VII	Hdw
Apamea castanea (Grote)	3	29.VII- 5.VIII	Hrb/Grs; PO.
Apamea cinefacta (Grote)	5	10.VI- 8.VII	
Apamea finitima Guenee	6	6.V- 17.VI	Grs; PO.
Apamea occidens (Grote)	2	10.VI- 24.VI	
Apharetra pyralis (Smith)	6	19.VIII- 30.IX	
Aseptis binotata (Walker)	3	20.V	Hdw
Asticta victoria (Grote)[5]	6	8.VII- 22.VII	
Autographa ampla (Walker)	3	8.VII- 12.VIII	Hdw
Autographa californica (Speyer)[7]	7	13.V- 30.IX	Hrb
Autographa metallica (Grote)	4	24.VI- 5.VIII	
Autographa pseudogamma (Grote)	3	24.VI- 1.VII	
Behrensia conchiformis Grote	4	6.V	Hdw
Brachylomia rectifascia (Smith)	5	5.VIII- 19.VIII	Shrb; SALIC., Salix sp.
Caenurgina erechtea (Cramer)[7]	2	22.VII- 5.VIII	Hrb

Chersotis juncta (Grote)	26	24.VI- 29.VII	Hrb
Chytonix divesta (Grote)	62	12.VIII- 30.IX	Grs; PO.
Crassivesica bocha (Morrison)	69	29.VII- 30.IX	Hrb
Crymodes devastator (Brace)	27	22.VII- 23.IX	Hrb/Grs; PO.
Crymodes longula (Grote)	2	5.VIII- 12.VIII	
Cryphia cuerva (Barnes)	48	1.VII- 2.IX	
Cucullia intermedia Speyer	10	6.V- 24.VI	Hrb; ASTER.
Cucullia postera Guenee	2	17.VI	Hrb; ASTER.
Dargida procincta (Grote)	3	5.VIII- 7.X	Hrb/Grs; PO.
Diarsia rosaria (Grote)	156	13.V- 8.VII	Grs; PO.
Dicestra oregonica (Grote)	1	27.V	
Egira curialis (Grote)	113	6.V- 13.V	Hdw
Egira perlubens (Grote)	18	6.V- 3.VI	Con; PIN.
Egira simplex (Walker)	68	6.V- 20.V	Hdw
Epidemas cinerea Smith	123	23.IX- 7.X	
Eremobina claudens (Walker)	11	8.VII- 2.IX	
Euplexia benesimilis McDunnough[5]	4	29.V- 10.VI	Hdw
Eurois astricta Morrison	656	17.VI- 19.VIII	Shrb; SALIC., Salix sp.
Eurois occulta (Linnaeus)	7	8.VII- 12.VIII	Hdw
Eutricopis nexilis (Morrison)	1	3.VI	Hrb
Euxoa aequalis (Harvey)	8	19.VIII- 23.IX	
Euxoa albipennis (Grote)	1	7.X	Hrb
Euxoa atomaris (Smith)	2	12.VIII- 19.VIII	
Euxoa auripennis LaFontaine	73	29.VII- 23.IX	
Euxoa auxiliaris (Grote)[7]	13	20.V- 30.IX	Hrb
Euxoa basalis (Grote)	9	12.VIII- 2.IX	
Euxoa bicollaris (Grote)	1	17.VI	
Euxoa brunneigera (Grote)	7	17.VI- 23.IX	
Euxoa castanea LaFontaine	17	8.VII- 12.VIII	
Euxoa catenula (Grote)	1	23.IX	Hrb
Euxoa choris (Harvey)	2	24.VI- 19.VIII	
Euxoa comosa (Morrison)	2	5.VIII- 19.VIII	Grs; PO.
Euxoa costata (Grote)	3	24.VI- 19.VIII	Hrb
Euxoa declarata (Walker)	20	12.VIII- 30.IX	Hrb
Euxoa difformis (Smith)	213	2.IX- 7.X	
Euxoa divergens (Walker)	78	27.V- 23.IX	Hrb
Euxoa henrietta Smith	1	8.VII	Hrb
Euxoa hollemani (Grote)	2	23.IX	
Euxoa idahoensis (Grote)	62	3.VI- 19.VIII	Hrb
Euxoa infausta (Walker)	13	10.VI- 29.VII	Hrb
Euxoa infracta (Morrison)	11	5.VIII- 2.IX	Hrb
Euxoa intrita (Morrison)	5	12.VIII- 2.IX	Hrb
Euxoa messoria (Harris)	8	19.VIII- 2.IX	Hrb
Euxoa munis (Grote)	1075	22.VII- 30.IX	Hrb
Euxoa obeliscoides (Guenee)	1	23.IX	
Euxoa occidentalis Lafontaine & Byers	13	19.VIII- 30.IX	
Euxoa olivalis (Grote)	2	29.VII	

Euxoa olivia (Morrison)	1	30.IX	Hrb
Euxoa plagigera (Morrison)	2	29.VII	
Euxoa punctigera (Walker)	3	19.VIII- 2.IX	Hrb
Euxoa ridingsiana (Grote)	1	5.VIII	Hrb
Euxoa satiens (Smith)	4	19.VIII- 2.IX	
Euxoa satis (Harvey)	66	10.VI- 23.IX	
Euxoa septentrionalis (Walker)	7	10.VI- 2.IX	
Euxoa simona McDunnough	1	5.VIII	
Euxoa terrena (Smith)	9	24.VI- 29.VII	
Euxoa tessellata (Harris)	12	3.VI- 19.VIII	Hrb
Feltia jaculifera (Guenee)	2	12.VIII- 2.IX	Hrb
Fishia evelina (French)	206	2.IX- 7.X	Hdw
Fishia yosemitae (Grote)	14	23.IX- 7.X	
Graphiphora haruspica (Grote)[5]	2	29.VII	Shrb; SALIC., Salix sp.
Heliothis oregonius (H.Edwards)	1	27.V	
Heliothis zea (Boddie)[7]	13	23.IX- 30.IX	Hrb
Homohadena fifia Dyar	2	8.VII	
Homorthodes furfurata (Grote)	4	3.VI- 8.VII	Hdw
Hydraecia medialis (Smith)	307	19.VIII- 7.X	Hrb
Hypena humuli Harris[7]	6	6.V- 30.IX	Hrb; URTIC., Urtica sp.
Hyppa indistincta Smith[5,7]	3	3.VI- 23.IX	Hdw
Hyppa xylinoides (Guenee)[7]	24	3.VI- 19.VIII	Hdw
Idia americalis (Guenee)[5]	4	29.VII- 12.VIII	Lichens
Lacanobia liquida (Grote)	5	10.VI- 29.VII	Hrb
Lacanobia lutra (Guenee)[5]	6	27.V- 17.VI	Hdw/Con
Lacanobia nevadae (Grote)	2	10.VI	Hdw; BETUL.
Lacanobia subjuncta (Grote & Robinson)	9	27.V- 8.VII	Hdw
Lacinipolia circumcincta (Smith)	159	12.VIII- 30.IX	
Lacinipolia olivacea (Morrison)	159	3.VI- 30.IX	Hrb
Lacinipolia pensilis (Grote)	14	5.VIII- 23.IX	Hrb
Lacinipolia strigicollis (Wallengren)	2	12.VIII	
Lacinipolia vicina (Grote)	21	29.VII- 2.IX	
Lasionycta marloffi (Dyar)	20	27.V- 15.VII	
Lasionycta perplexa (Smith)	116	3.VI- 12.VIII	
Leucania farcta Grote	223	10.VI- 2.IX	Grs; PO.
Leucania insueta Guenee	39	27.V- 10.VI	Grs; PO.
Litholomia napaea (Morrison)	3	23.IX- 30.IX	Shrb; SALIC., Salix sp.
Lithomoia solidaginis (Hubner)[5]	1	30.IX	Hdw
Lithophane atara (Smith)[6]	2	30.IX	
Lithophane georgii Grote [6]	4	23.IX- 30.IX	Hdw
Luperina innota Smith	2	10.VI- 17.VI	
Luperina passer (Guenee)[7]	8	3.VI- 5.VIII	Hrb; POLYGON.
Mamestra configurata Walker[7]	2	27.V- 12.VIII	Hrb

Melanchra adjuncta (Guenee)[5,7]	9	27.V- 30.IX	Hdw
Merolonche ursina Smith	11	6.V- 3.VI	Hrb; FAB., Lupinus sp.
Mycterophora longipalpata Hulst[5]	1	12.VIII	Lichens
Mycterophora rubricans Barnes & McDunnough	2	8.VII- 12.VIII	
Nedra stewarti (Grote)[5,7]	5	6.V- 19.VIII	Hrb; HYPERIC., Hypericum sp.
Nephelodes minians Guenee	8	2.IX- 30.IX	Grs; PO.
Nycteola cinereana Neumoegen & Dyar	1	6.V	Shrb; SALIC.
Oligia illocata (Walker)[5]	17	2.IX- 23.IX	Hdw
Oligia indirecta (Grote)	16	1.VII- 12.VIII	Grs; PO.
Oligia tonsa (Grote)[7]	36	3.VI- 23.IX	
Oncocnemis chorda (Grote)	2	12.VIII- 30.IX	Hdw
Oncocnemis figurata (Harvey)	5	24.VI- 8.VII	Shrb; CAPRIFOLI.
Oncocnemis phairi McDunnough	9	23.IX- 30.IX	
Orthosia hibisci (Guenee)	25	6.V- 13.V	Hdw
Orthosia pulchella (Harvey)	44	6.V- 20.V	Hdw
Orthosia segregata (Smith)[4]	27	6.V- 13.V	Hdw
Panthea portlandia (Grote)	36	6.V- 29.VII	Con; PIN.
Papestra cristifera (Walker)[5]	39	6.V- 5.VIII	Hdw/Con
Papestra quadrata (Smith)[4]	27	6.V- 10.VI	Hdw/Con
Paradiarsia littoralis (Packard)[4]	8	27.V- 10.VI	Hrb
Peridroma saucia (Hubner)[7]	15	27.V- 30.IX	Hrb
Phobolosia anfracta (H.Edwards)	1	5.VIII	
Platyperigea extima (Walker)	34	29.VII- 30.IX	Hrb
Platyperigea meralis (Morrison)	1	8.VII	Hrb
Platypolia loda (Strecker)	16	23.IX- 30.IX	Hdw
Pleromelloida cinerea (Smith)	67	23.IX- 30.IX	Shrb; CAPRIFOLI.
Pleromelloida obliquata (Smith)	11	6.V	Shrb; CAPRIFOLI., Symphoricarpos sp.
Polia discalis (Grote)	32	24.VI- 22.VII	Shrb; SALIC., Salix sp.
Polia purpurissata (Grote)	464	17.VI- 19.VIII	Hdw
Protagrotis obscura Barnes & McDunnough	10	17.VI- 8.VII	
Protolampra rufipectus (Morrison)	28	5.VIII- 23.IX	Hdw
Protoperigea posticata Harvey	1	23.IX	Hdw
Protorthodes curtica (Smith)	10	19.VIII- 2.IX	
Pseudaletia unipuncta (Haworth)[7]	24	2.IX- 7.X	Grs; PO.
Pseudeva palligera (Grote)	1	22.VII	
Pseudorthosia variabilis Grote	42	19.VIII- 23.IX	Hrb
Pyrrhia exprimens (Walker)[5]	1	8.VII	Hdw
Rancora strigata Smith	1	15.VII	
Rhyacia quadrangula (Zetterstedt)	1	27.V	
Rhynchagrotis exsertistigma[7] (Morrison)	27	27.V- 30.IX	Hrb
Rhynchagrotis insularis (Grote)	6	29.VII- 2.IX	
Scoliopteryx libatrix (Linnaeus)[6]	2	6.V	Shrb; SALIC., Salix sp.

Sideridis maryx (Guenee)[4]	3	2.VI	
Sideridis rosea (Harvey)	3	13.V- 10.VI	Hdw
Spaelotis havilae (Grote)[7]	545	13.V- 30.IX	Hrb
Spodoptera praefica (Grote)[7]	54	29.VII- 30.IX	Hrb
Stretchia muricina (Grote)	35	6.V- 27.V	Hdw
Synedoida adumbrata (Behr)	8	27.V- 1.VII	Shrb; ERIC., Vaccinum sp.
Synedoida hudsonica (Grote & Robinson)[4]	22	10.VI- 24.VI	Hdw
Synedoida ochracea (Behr)	1	10.VI	
Synedoida sabulosa H.Edwards	6	10.VI- 22.VII	
Syngrapha celsa (H.Edwards)	1	15.VII	Con; PIN.
Syngrapha epigaea (Grote)[5]	6	12.VIII- 19.VIII	Shrb; ERIC., Vaccinum sp.
Syngrapha orophila Hampson	11	24.VI- 8.VII	Shrb; ERIC., Vaccinum sp.
Syngrapha viridisigma (Grote)	4	22.VII- 19.VIII	Con; PIN.
Tholera americana (Smith)	4	2.IX- 23.IX	
Trichoplusia ni (Hubner)[7]	2	30.IX- 7.X	Hrb
Ufeus satyricus Grote[6]	2	30.IX	Shrb/Hdw; SALIC.
Xestia collaris (Grote & Robinson)	20	12.VIII- 23.IX	
Xestia dolosa Franclemont[7]	5	1.VII- 23.IX	Hrb
Xestia oblata (Morrison)[7]	164	27.V- 30.IX	Hdw
Xestia smithii (Snellen)	9	24.VI- 2.IX	Hrb
Xylena cineritia Grote[6]	4	6.V- 13.V	Hdw
Xylena curvimacula (Morrison)[6]	2	6.V	Hdw
Xylena thoracica (Putnam-Cramer)[4,6]	14	6.V; 23.IX- 30.IX	Hdw
Xylotype acadia Barnes & Benjamin[4]	2	30.IX	Con; PINA., Larix sp.
Zale duplicata (Bethune)[4]	7	6.V	Con; PINA.
Zotheca tranquilla Grote	10	1.VII- 8.VII	Shrb; CAPRIFOLI., Sambucus sp.
NOTODONTIDAE			
Gluphisia septentrionis Walker	1	13.V	Shrb; SALIC.
Oligocentria pallida (Strecker)	1	24.VI	Hdw
Schizura ipomoeae Doubleday	3	1.VII- 22.VII	Hdw
OECOPHORIDAE			
Agonopterix alstroemeriana (Clemens)	13	12.VIII- 23.IX	
Ethmia sp.	4	2.IX- 23.IX	
PLUTELLIDAE			
Ypsolopha sp.	88	5.VIII- 30.IX	
PTEROPHORIDAE	54	20.V- 5.IX	
PYRALIDAE			
Acrobasis tricolorella (Grote)	35	29.VII- 19.VIII	Hdw
Catoptria oregonica (Grote)	42	5.VIII- 2.IX	

Cosipara tricoloralis (Dyar)	11	22.VII- 5.VIII	
Crambus leachellus (Zincken)	262	12.VIII- 30.IX	
Crambus pascuellus (Linnaeus)	58	10.VI- 19.VIII	
Crambus plumbifimbriellus Dyar	170	3.VI- 12.VIII	
Dioryctria auranticella (Grote)	129	22.VII- 12.VIII	Con; PINA., Pinus ponderosa cones
Dioryctria baumhoferi Heinrich	94	10.VI- 23.IX	
Euchromius ocelleus (Haworth)	1	5.VIII	
Eudonia sp.	4	8.VII	
Evergestis funalis (Grote)	45	8.VII- 2.IX	
Jocara trahalis (Grote)	6	8.VII- 19.VIII	
Loxostege sticticalis (Linnaeus)	1	23.IX	
Mecyna mustelinalis (Packard)	80	10.VI- 2.IX	
Mimoschinia rufofascialis (Stephens)	14	10.VI- 12.VIII	
Nomophila nearctia Munroe	16	23.IX- 30.IX	
Omphalocera occidentalis Barnes & Benjamin	4	29.VII- 12.VIII	
Pediasia dorsipunctella (Kraft)	81	8.VII- 2.IX	
Pediasia trisecta (Walker)	21	5.VIII- 2.IX	
Petrophila confusalis (Walker)	2033	10.VI- 19.VIII	
Pima fulvirugella (Ragonot)	2	27.V- 3.VI	
Pyla fusca (Haworth)	734	27.V- 23.IX	
Pyrausta fodinalis (Lederer)	15	10.VI- 19.VIII	
Pyrausta grotei Munroe	1	8.VII	
Pyrausta nicalis (Grote)	7	10.VI- 22.VII	
Pyrausta semirubralis (Packard)	2	10.VI	
Pyrausta subsequalis (Guenee)	39	6.V- 23.IX	
Pyrausta unifascialis (Packard)	31	6.V- 10.VI	
Saucrobotys fumoferalis (Hulst)	18	20.V- 12.VIII	
Scoparia sp.	249	3.VI- 2.IX	
Sitochroa chortalis (Grote)	2	3.VI- 24.VI	
Udea itysalis (Walker)	54	10.VI- 5.VIII	
Udea profundalis (Packard)	19	3.VI- 8.VII	
SATURNIIDAE			
Antheraea polyphemus (Cramer)	4	13.V- 8.VII	Hwd
Hyalophora euryalus (Boisduval)	16	6.V- 17.VI	Shrb; RHAMN., Ceanothus sp.
SPHINGIDAE			
Hemaris diffinis (Boisduval)	2	13.V- 20.V	Shrb; CAPRIFOLI., Symphoricarpos sp.
Hyles lineata (Fabricius)[7]	16	6.V- 24.VI 5.VIII- 19.VIII	Hrb; ONAGR., Epilobium sp.
Paonias myops (J.E.Smith)	7	20.V- 10.VI	Hdw
Smerinthus cerisyi Kirby	86	6.V- 12.VIII	Shrb; SALIC., Salix sp.
Sphinx drupiferarum (J.E.Smith)	2	10.VI	Shrb; ROS.

Sphinx vashti Strecker	232	6.V- 8.VII	Shrb; CAPRIFOLI., Symphoricarpos sp.
THYATIRIDAE			
Ceranemota tearlei (H.Edwards)[9]	23	IX- 30.IX	
Euthyatira semicircularis (Grote)	2	24.VI	
Habrosyne scripta Gosse	2	24.VI	Shrb; ROS., Rubus sp.
TORTRICIDAE			
Acleris brittania Kraft	81	12.VIII- 30.IX	
Archips cerasivorana (Fitch)	2	29.VII- 5.VIII	Hdw
Choristoneura rosaceana (Harris)	38	24.VI- 12.VIII	Hdw
Choristoneura occidentalis Freeman	59	15.VII- 12.VIII	Con; PIN.
Clepsis persicana (Fitch)	8	10.VI- 8.VII	Hdw
Eana argentana (Clemens)	137	10.VI- 5.VIII	
Epiblema sp.	4	10.VI- 24.VI	
Eucosma agricolana (Walsingham)	3	3.VI- 10.VI	
Hystrichophora stygiana (Dyar)	50	17.VI- 19.VIII	
Oleuthreutes cespitana (Hubner)	26	6.V- 10.VI	Hdw
Oleuthreutes galaxana Kraft	2	10.VI	
Oleuthreutes glaciana (Moschler)	1	10.VI	Hdw
Pelochrista sp.	245	10.VI- 19.VIII	
Rhyacionia sp.	4	10.VI- 15.VII	Con; shoot borers

[1]Total number of specimens taken in blacklight traps over trapping period, May 6 through October 7.

[2]Dates are mid-points of weekly trapping periods; written as day=arabic numeral, month= Roman numeral (e.g. 19.VIII is 19 August).

[3]Host plant references: Covell 1984; Lafontaine 1987; McFarland 1963, 1975; McGugan 1958; Parsons et al. 1991; Prentice 1962, 1963, 1965; Rockburne and Lafontaine 1976; Tietz 1972. Abbreviations are: Con= conifers, Hdw= hardwoods, Hrb= herbs, Grs= grasses, Shrb= shrubs, APOCYN.= APOCYNACEAE, ASTER.= ASTERACEAE, BETUL.= BETULACEAE, CAPRIFOLI.= CAPRIFOLIACEAE, CARYOPHYLL.= CARYOPHYLLACEAE, CUPRESS.= CUPRESSACEAE, ERIC.- ERICACEAE, FAB.= FABACEAE, GROSSULARI.= GROSSULARIACEAE, HYPERIC.= HYPERICACEAE, MALV.= MALVACEAE, ONAGR.= ONAGRACEAE, PIN.= PINACEAE, PO.= POACEAE, POLYGON.= POLYGONACEAE, RHAMN.= RHAMNACEAE, ROS.= ROSACEAE, SALIC.= SALICACEAE, URTIC.= URTICACEAE.

[4]New species record for Oregon (Grimble et al. 1993).

[5]Previously known only from the Cascades and Coastal Range in Oregon.

[6]Adults overwinter in this species (Rockburne and Lafontaine 1976).

[7]This species known to have more than one generational emergence period per year.

Table 3. Relative population density of moth species with "rare," "uncommon," "common," or "abundant" populations in the Blue Mountains, based upon light trap sampling, 1992.

	Relative population density				
Family	Rare (1-5)[1]	Uncommon (6-25)	Common (26 to 200)	Abundant (over 200)	Total
ALUCITIDAE	1	-	-	-	1
ARCTIIDAE	3	1	1	2	7
GEOMETRIDAE	33	27	29	4	93
HEPIALIDAE	1	-	-	-	1
LASIOCAMPIDAE	1	1	2	0	4
LYMANTRIIDAE	1	-	-	-	1
NOCTUIDAE	96	70	37	9	212
NOTODONTIDAE	3	-	-	-	3
OECOPHORIDAE	1	1	-	-	2
PLUTELLIDAE	-	-	1	-	1
PYRALIDAE	8	9	12	4	33
SATURNIIDAE	1	1	-	-	2
SPHINGIDAE	2	2	1	1	6
THYATIRIDAE	2	1	-	-	3
TORTRICIDAE	6	1	6	1	14
Total:	159	114	89	21	383
Percent:	41.5	29.8	23.2	5.5	100.

[1]Number of species with 5 or less individuals collected in 8 traps at 4 sites over entire trapping period (May-October 1992).

Table 4. Types of larval food sources utilized by macrolepidoptera in the Blue Mountains of Oregon.

Food sources[1]	No. species	Percent
Hardwoods	134	44
Herbs/grasses	130	43
Conifers	30	10
Conifers/hardwoods	6	2
Lichens/dead leaves	2	1
Total:	302	100

[1]Based on information provided in: Covell 1984; Dornfeld 1980; Lafontaine 1987; McFarland 1963, 1975; McGugan 1958; Parsons et al. 1991; Prentice 1962, 1963, 1965; Rockburne and Lafontaine 1976; Tietz 1972.